



## Oral health of school children in rural Vietnam

### Part I. Oral hygiene, diet and dental caries



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#### Abstract

**Objectives:** Caries is a huge health and economic burden in developing countries. This study was conducted with Rotary Australia Vietnam Dental Health Project 2007, a humanitarian program to improve oral health. The aim was to investigate oral hygiene practices, dietary habits and caries among rural Vietnamese children. **Methods:** A total of 142 children (12-16yrs) attending 4 schools in Ben Cau, Vietnam, were studied, completing a questionnaire (in Vietnamese) on oral hygiene and diet. Caries scores were obtained for 69, 12 yr-olds. **Results:** Most participants (77%) cleaned their teeth  $\geq 2$ /day; before breakfast and before bed (51%); using toothbrush, toothpaste, toothpicks and rinses (47%). Caries prevalence of 12 yr-olds was 96%; mean DMFT ( $\pm$ SD) was 4.4 (2.3). The trend in caries experience was significantly higher in girls than boys ( $\chi^2$ trend = 7.72,  $p < 0.01$ ). Mean exposure to sweet drinks plus sweet foods was 2.6 (1.6) times/day. The caries experience trend increased with increasing frequency of sweet drink consumption ( $\chi^2$ trend = 7.03,  $p < 0.01$ ). Mean caries experience was lower (but not significantly) if traditional cleansing (toothpicks, rinses) was included. **Conclusions:** Dental caries is very prevalent among these rural Vietnamese schoolchildren and this study highlights their current urgency for professional dental care, preventive measures and oral health education.

#### Introduction

Dental caries is a huge health and economic burden in developing countries, causing much pain and suffering, especially for children.<sup>1,2</sup> Dietary sugar is the most important dietary etiological factor in caries.<sup>3</sup> A low socioeconomic status has been associated with poorer periodontal and dental health.<sup>4</sup> In 2004, the World Health Organization (WHO) reported DMFT for Vietnamese 12 yr-olds as 1.9, slightly higher than the global average DMFT of 1.61 for 12 yr-olds, and much higher than the DMFT for Australian 12 yr-olds of 0.8.<sup>5</sup> Children living in rural Vietnam may be at increased risk of developing caries as they do not have access to fluoridated drinking water.

The Rotary Australia Vietnam Dental Health (RAVDH) Project is a humanitarian aid program seeking to improve oral health of children in rural Vietnam. One of the aims of the RAVDH Project is to support the Oral Health Policy of the Vietnamese Ministry of Health and increase awareness of preventive measures. The RAVDH Project promotes public awareness of oral health issues and advocates for greater dental health funding from local authorities. In order to prevent a sense of dependency, the

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## President's Report

Nina Vasan

I'm writing this as the Olympics are drawing to a close – hasn't it been fantastic...

The determination and hard work of these athletes is to be admired. Australia has done extremely well, and New Zealand is rated second in the world with medals per capita after Slovenia. The impact these athletes have on young children is so positive. All of my patients coming in this week have been holding games at school, reading about the history of the games and have their favorite events they are following.

The name that springs to mind is Michael Phelps winning eight gold medals! I read he has 12,000 calories a day. This is over four times the daily median energy intake of New Zealand men. His punishing five hours a day training regime, six days a week, is more than enough to burn it off. His daily intake consist of: breakfast – three fried-egg sandwiches with cheese, lettuce, tomatoes, fried onions and mayonnaise. Two cups of coffee, to keep up the fluids, followed by a five-egg omelette, a bowl of grits (a coarsely ground corn porridge), and three slices of french toast, sprinkled with extra sugar and three chocolate-chip pancakes.

Lunch – a whole packet 500g of enriched pasta and two large ham and cheese sandwiches and a 1000-calorie energy drink. Dinner – another half kilogram of enriched pasta, an entire pizza and more energy drink.

"Eat, sleep and swim, that's all I can do," Phelps told NBC television. I wonder if he has any dental erosion from his diet and prolonged swimming in chlorinated pools?

### Probiotics in dentistry

I've had an increasing number of parents give their children daily probiotics either as tablets or small dairy drinks. Probiotics are bacterial cultures or living microorganisms which, upon ingestion

in certain numbers, exert health benefits beyond inherent general nutrition and support a good and healthy intestinal bacterial flora. Do probiotics affect bacterial levels in the oral cavity?

Experimental studies and results from randomized controlled trials have shown that certain gut bacteria, in particular species of *Lactobacillus* and *Bifidobacterium*, may exert beneficial effects in the oral cavity by inhibiting cariogenic streptococci and *Candida* sp. However, there is not a lot of information and I suspect it would depend on the delivery system. A probiotic lozenge sucked would probably influence oral microbiota more than a small drink.

A paper in the *Int J Paed Dent* (2007; Vol 18: 1; 35-38) reported a randomized, double-blind, placebo-controlled study involving 20 healthy young women who sucked on probiotics daily for 10 days. Salivary mutans streptococci and lactobacilli were enumerated with chair-side kits at baseline and 1 day after the final ingestion. The results showed Salivary *S. mutans* levels in the probiotic test group were significantly reduced, with statistical significance of reduction ( $P < 0.05$ ). They concluded a short-term daily ingestion of lactobacilli-derived probiotics delivered via medical device containing probiotic lozenge reduced the levels of salivary mutans.

Some of the Periodontists are excited as the effect of probiotics on the effect and management of periodontal disease is being researched. It is early days yet, but the signs are very positive.

### Do you love what you do?

One of the parents of a patient asked me the other day, how I decided to do what I do and how much I enjoyed it. It sounds cliché but I really do enjoy what I do, of

course there are days when things don't go to plan, or a difficult parent/child makes the day more challenging. But on the whole, I find it an enjoyable career with many different technical aspects. I get bored easily so need a job with variety. I came across this little piece from a man who really loves what he does:

### Love and Loss

I was lucky. I found what I loved to do early in life. Woz and I started Apple in my parents garage when I was 20. We worked hard, and in 10 years Apple had grown from just the two of us in a garage into a \$2 billion company with over 4000 employees. We had just released our finest creation – the Macintosh – a year earlier, and I had just turned 30. And then I got fired. How can you get fired from a company you started?

Well, as Apple grew we hired someone who I thought was very talented to run the company with me, and for the first year or so things went well. But then our visions of the future began to diverge and eventually we had a falling out. When we did, our Board of Directors sided with him. So at 30, I was out. And very publicly out. What had been the focus of my entire adult life was gone, and it was devastating.

I really didn't know what to do for a few months. I felt that I had let the previous generation of entrepreneurs down – that I had dropped the baton as it was being passed to me. I met with David Packard and Bob Noyce and tried to apologize for screwing up so badly. I was a very public failure, and I thought about running away from the valley. But something slowly began to dawn on me – I still loved what I did. The turn of events at Apple had not changed that one bit. I had been rejected, but I was still in love. And so I decided to start over.





## Perth Western Australia 12th -15th March 2009

Dear Members of the Australian and New Zealand Society of Paediatric Dentistry,

I didn't see it then, but it turned out that getting fired from Apple was the best thing that could have ever happened to me. The heaviness of being successful was replaced by the lightness of being a beginner again, less sure about everything. It freed me to enter one of the most creative periods of my life.

During the next five years, I started a company named NeXT, another company named Pixar. Pixar went on to create the world's first computer animated feature film, Toy Story, and is now the most successful animation studio in the world. In a remarkable turn of events, Apple bought NeXT.

I returned to Apple, and the technology we developed at NeXT is at the heart of Apple's current renaissance.

I'm pretty sure none of this would have happened if I hadn't been fired from Apple. It was awful tasting medicine, but I guess the patient needed it. Sometimes life hits you in the head with a brick. Don't lose faith. I'm convinced that the only thing that kept me going was that I loved what I did. You've got to find what you love.

Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do. If you haven't found it yet, keep looking.

Don't settle. As with all matters of the heart, you'll know when you find it. And, like any great relationship, it just gets better and better as the years roll on. So keep looking until you find it. Don't settle.

Steve Jobs

Why would you want to attend an Australian Dental Association Congress and particularly if it is being held all the way across the country in Perth, Western Australia? There is usually not much Paediatric Dentistry at these ADA conferences anyway!

Well, look again. Never before has any ADA Congress had so much for those dentists (and members of their team) who are interested in Dentistry for Children.

### Thursday 12th March 2009

Australasian Academy of Paediatric Dentistry and Australian and New Zealand Society of Paediatric Dentistry Joint Clinical Pre-Congress Meeting (Full Day)

Early Childhood Caries Symposium  
Catch Them Young and Treat Them Well

Keynote Speaker  
Dr Francisco Ramos-Gomez, Graduate Director, UCLA Los Angeles, USA

### Friday 13 March 2009

Keynote Lecture Facilitating Pulp Healing in Carious Primary Molars  
Professor Monty Duggal  
Paediatric Dentist, Leeds, UK

Luncheon with Learning Dr Fiona Ng

The Emergency Management of Dental Trauma in the Sporting Arena  
Dr Mark Foster, Dr Vanessa William, Dr Helen Cornwell, Dr Bernard Koong, Dr Evan Kakulas, Mr Rob Armanasco

Launch of Society for Sport Dentistry and Traumatology  
Dr Helen Cornwell, Dr James Lucas

### Saturday 14 March 2009

Keynote Lecture Molar Incisor Hypomineralisation (MIH)  
Professor Monty Duggal  
Paediatric Dentist, Leeds, UK

Luncheon with Learning  
Dr Vanessa William, Dr John Winters

Rising Star Session  
Dr Fiona Ng

### Sunday 15 March 2009

Keynote Lecture A Cellular Approach to the Management of Trauma Complications  
Professor Monty Duggal  
Paediatric Dentist, Leeds, UK.

Luncheon with Learning  
Dr Mark Foster

A Sunday Afternoon of Paediatric Dentistry and Orthodontics  
Dr John Winters, Dr Peter Readman, Dr James Lucas, Dr Nina Vasan, Dr Peter Dillon

There is also a whole lot more and a separate Team Programme for your indispensable staff. Please visit the congress website at [www.ada2009.com](http://www.ada2009.com) for more details.

John Owen Lisa Heitz-Mayfield Peter Gregory

Chairman of Congress Chairman Scientific Committee Scientific Committee



CONTINUED FROM PAGE 1...

Project proceeds to different villages every four years after improving simple equipment and knowledge in health centre clinics. While acknowledging that prevention is better than cure, leaders have noted the need to provide cure before participants will accept preventive messages as credible. The long-term goal of the RAVDH Project is to create self-sufficient communities regarding oral health care.

This study investigated oral hygiene practices, dietary habits and caries of children attending 4 schools in rural Vietnam. This information can provide baseline data for the development of oral health strategies for this community.

## Methods

### The Rotary Australia Vietnam Dental Health Project

The study was conducted in Ben Cau, a small district in Tay Ninh province, north-west of Ho Chi Minh City, as part of RAVDH Project in March-April 2007. A team from Australia (dentists, dental nurses, one dental student, RB) and local interpreters worked for 1 week at the Benh Vien Da Khoa Huyen (District Hospital) using a basic 2-chair dental clinic supplemented with a table and pillow for triage examinations and extractions. Schoolchildren (approx. 400) from 4 local schools attended the clinic in the week. Children were triaged and ranked by treatment needs. Treatment performed was mainly restoration of permanent teeth using rotary equipment with glass-ionomer cement for restorations and sealants. Symptomatic non-restorable teeth were extracted.

### Study sample

The study was approved by the Departmental Human Ethics Advisory Group, School of Dental Science, University of Melbourne. Consent for study participation was assumed by the child's attendance. A total of 142 children aged 12-16 years, who attended the clinic, participated in the study

### Questionnaire

An anonymous 7-item questionnaire was developed by the authors (in English, then translated into Vietnamese), to obtain information on gender and age;

frequency, timing and aids used for tooth cleaning; and daily consumption of sweet drinks and sweet foods. Questions on age, gender, frequency of tooth cleaning, consumption of sweet drinks and sweet foods were completed by selecting the most appropriate option from several given. Questions on timing of tooth cleaning and tooth cleaning aids allowed participants to provide an answer if an appropriate option was not given. To ensure validity, the questionnaire was back-translated into English. The forward and backward translations were done by separate translators fluent in both Vietnamese and English. Participants were assisted by a local Vietnamese interpreter working with the RAVDH Project who wrote their responses onto each questionnaire. The interpreter was instructed to not influence participant responses in any way.

### Dental Examination

A DMFT score was obtained for 69, 12 yr-olds (of 142 subjects) from a dental examination (independent of the triage examination) conducted by one examiner (RB) using a dental mirror, sickle probe and headlight and recorded on a dental chart by an assistant using symbols to chart caries, restorations and missing teeth. No radiographs were available. Visible cavitation or discolouration showing through enamel were the criteria used for caries diagnosis. Teeth were not cleaned or dried prior to examination. In judging whether teeth were extracted or un-erupted, these guidelines were used:

- Bilaterally absent permanent teeth (excluding first permanent molars) were assumed to be 'Un-erupted' (not 'Missing').
- Unilaterally absent permanent teeth (excluding permanent canines or second permanent molars) were assumed to be 'Missing' (not 'Un-erupted').
- All decayed, filled or missing primary teeth were included in the DMFT score if the primary teeth were present rather than the permanent teeth.

### Statistics

Data were categorized to examine distributions. The weekly consumption of sweet drinks or sweet foods was converted to a daily frequency by dividing the weekly value by 7 to give mean daily

frequency (eg. 3 times/week = 0.43 times/day, categorized as '<1/day'). Data were entered into Excel spreadsheets (Microsoft, 2000) and descriptive statistics were calculated. Group mean DMFT scores were compared using unpaired t tests ( $\alpha=0.01$ ), and categorical trends were examined using  $\chi^2$  trend statistic ( $df=1$ ) for non-parametric data.<sup>6</sup>

## Results

### Age and gender distribution

All 142 completed questionnaires were useable. The study sample contained 52 boys (37%) and 87 girls (61%); most were aged 12-13 yrs (91%; Table 1).

### Exposure to dietary sugars

The mean ( $\pm$ SD) frequencies of reported daily consumption of sweet drinks or sweet foods by subjects were: sweet drinks: 1.6 (1.0), sweet foods: 1.0 (1.0), and 2.6 (1.6) for sweet drinks plus sweet foods (Table 2). A few subjects (11%) consumed sweet drinks plus sweet foods 5-8 times/day; 25% consumed these items once per day or less. Common sweet drinks were carbonated beverages (eg. Coca Cola™), sugar cane juice, orange juice, and sweetened iced tea. Common sweet foods were sweetened porridge (made from rice, beans and sugar), sticky candy, rice sweets, sugar cane, ice cream and sweet potato.

### Oral hygiene habits

Most subjects cleaned their teeth twice or more per day (77%); 97% cleaned at least once daily (Table 3). Four subjects (3%) did not clean their teeth or did not respond. The most common tooth cleaning time was before breakfast and before bed (51%). Only 4% cleaned their teeth after breakfast and 76% cleaned before bed. All subjects who cleaned their teeth (99%) used a tooth brush and toothpaste. In addition, 67% used toothpicks and 66% rinsed with mouthwash, water or salty water; these latter procedures were deemed by the authors to be 'traditional' tooth cleaning methods. Only one subject flossed.

### Dental caries experience of 12 yr-olds

Of the 86, 12 yr-olds examined, a total of 69 (32 boys, 37 girls) were examined for caries and calculation of DMFT scores

(Table 4). Only 3 (4%) of the children had a DMFT of zero; the caries prevalence was 96%. The mean DMFT was 4.4 (2.3). The trend towards increasing caries experience among girls exceeded that for boys with statistical significance ( $\chi^2$ trend = 7.72,  $p < 0.01$ ), and the mean DMFT for girls significantly exceeded that for boys ( $5.1 \pm 2.3$  vs  $3.6 \pm 2.0$ ;  $p < 0.002$ ; Table 4). Of the total DMFT, the 'Filled' (FT) component was 1.9% and the 'Decayed' (DT) component was 97% (not tabulated).

#### Caries and exposure to dietary sugars of 12 yr-olds

The mean ( $\pm$ SD) frequencies of reported daily consumptions were: sweet drinks: 1.7 (1.2); sweet foods: 1.2 (1.0); and 2.9 (1.7) for sweet drinks plus sweet foods (Table 5). Of this group, 86% consumed sweet foods plus sweet drinks at least twice per day. The trend towards increasing caries experience with increasing frequency of sweet drink consumption was statistically significant ( $\chi^2$ trend = 7.03,  $p < 0.01$ ). Exposure frequency to sweet foods or sweet foods plus sweet drinks was not correlated with increasing caries experience.

#### Caries and oral hygiene habits of 12 yr-olds

Most subjects cleaned their teeth twice or more per day (91%; Table 6). The most common time for tooth cleaning was before breakfast (90%); only 35% cleaned their teeth before bed time. All subjects used a tooth brush and toothpaste. In addition, 76% used toothpicks and 76% rinsed with mouthwash, water or salty water. There was no significant relationship between caries experience and frequency of cleaning. Subjects cleaning their teeth before breakfast and before bed had a lower mean DMFT than those who used any other pattern of cleaning ( $4.1 \pm 2.2$  vs.  $4.6 \pm 2.5$ ), but this was not statistically significant. The use of traditional cleaning aids in addition to toothbrush and toothpaste was associated with lower caries experience (but not significantly).

TABLE 1: DISTRIBUTION OF 142 SCHOOLCHILDREN BY AGE AND GENDER

Age (years)	No. of boys (%)	No. of girls (%)	No answer (%)	Total children (%)
12	37 (43)	49 (57)	0 (0)	86 (61)
13	11 (26)	32 (74)	0 (0)	43 (30)
No answer	1 (100)	0 (0)	0 (0)	1 (0.7)
Total	52 (37)	87 (61)	3 (2)	142 (100)

TABLE 2: REPORTED FREQUENCIES OF CONSUMPTION OF SWEET DRINKS AND SWEET FOODS BY 142 SCHOOLCHILDREN

Consumption pattern	Frequency of consumption per day	Distribution of children (n=142) (%)
Sweet drinks	0 or <1	16 (11)
	1	61 (43)
	2	50 (35)
	3 or more	15 (11)
Mean frequency ( $\pm$ S.D.)		1.6 ( $\pm$ 1.0)
Sweet foods	0	35 (24)
	<1	16 (11)
	1	59 (42)
	2	24 (17)
	3 or more	9 (6)
Mean frequency ( $\pm$ S.D.)		1.0 ( $\pm$ 1.0)
Sweet drinks plus sweet foods	0 or <1	7 (5)
	1	28 (20)
	2	49 (34)
	3 - 4	42 (30)
	5 - 8	16 (11)
Mean frequency ( $\pm$ S.D.)		2.6 ( $\pm$ 1.6)

TABLE 3: REPORTED ORAL HYGIENE PRACTICES OF 142 SCHOOLCHILDREN

Oral hygiene practices	Frequency of pattern	Distribution of children (n=142) (%)
Frequency of tooth cleaning per day	0	1 (1)
	1	29 (20)
	2	77 (54)
	3 or more	32 (23)
	No answer	3 (2)
Time of tooth cleaning	Teeth not cleaned	1 (1)
	Before breakfast +/- afternoon	31 (22)
	Before breakfast + before bed	73 (51)
	After breakfast + before bed +/- other time	4 (3)
	Before bed + afternoon +/- other time	31 (22)
	Before + after breakfast	2 (1)
Tooth cleaning aids used	Teeth not cleaned	1(1)
	Toothbrush + toothpaste	141 (99)
Aids used in addition to toothbrush and toothpaste	Tooth brush + toothpaste only	18 (13)
	Plus toothpicks	29 (20)
	Plus rinses*	27 (19)
	Plus toothpicks + rinses	67 (47)

\* Rinses = mouthwash, water or salty water



TABLE 4: CARIES EXPERIENCE OF 69, 12 YEAR OLD SCHOOLCHILDREN

Caries experience (DMFT)*	No. of boys (n = 32)	No. of girls (n = 37)	Total children (n = 69)
0	12	4	16
1	15	18	33
2	5	15	20
Mean DMFT (±SD)	3.6 (± 2.0)	5.1 (± 2.3)	4.4 (±2.3)

\* DMFT included dmft where primary teeth were present

TABLE 5: REPORTED FREQUENCIES OF CONSUMPTION OF SWEET DRINKS AND SWEET FOODS BY 69, 12 YEAR OLD SCHOOLCHILDREN

Consumption pattern	Frequency of consumption per day	Distribution of children (n=69) (%)	Mean DMFT* (±SD)
Sweet drinks	0 - 1	30 (43)	4.3 (2.0)
	2	28 (41)	4.5 (2.8)
	3 or more	11 (16)	4.7 (0.8)
Mean frequency (±SD)		1.7 (±1.2)	
Sweet foods	0 or <1	18 (26)	4.6 (2.5)
	1	31 (45)	4.4 (2.5)
	2	14 (20)	4.1 (1.9)
	3 or more	6 (9)	4.5 (2.0)
Mean frequency (±SD)	1.2 (± 1.0)		
Sweet drinks plus sweet foods	0 - 1	10 (14)	4.9 (1.7)
	2	24 (35)	4.0 (2.6)
	3 - 4	24 (35)	4.6 (2.6)
	5 - 8	11 (16)	4.3 (1.7)
Mean frequency (±SD)		2.9 (± 1.7)	

\* DMFT included dmft where primary teeth were present

TABLE 3: REPORTED ORAL HYGIENE PRACTICES OF 142 SCHOOLCHILDREN

Oral hygiene practices	Frequency of pattern	Distribution of children (n=69) (%)	Mean DMFT* (±SD)
Frequency of tooth cleaning per day	1	4 (6)	4.3 (2.5)
	2	45 (65)	4.4 (2.2)
	3 or more	18 (26)	4.5 (2.7)
	No answer	2 (3)	4.5 (3.5)
Timing of tooth cleaning	Before breakfast + before bed	17 (25)	4.1 (2.2)
	Before breakfast +/- afternoon	42 (61)	4.2 (2.2)
	After breakfast + before bed		
	+/- other time	5 (7)	2.0 (0.0)
	Before bed + afternoon		
	+/- other time	2 (3)	5.2 (2.6)
	Before + after breakfast	3 (4)	4.0 (0.0)
Both cleaning aids used	Toothbrush + toothpaste	69 (100)	
Aids used in addition to toothbrush and toothpaste	Tooth brush + toothpaste only	4 (6)	6.0 (1.4)
	Plus toothpicks	12 (17)	4.7 (2.4)
	Plus rinses‡	12 (17)	4.0 (2.4)
	Plus toothpicks + rinses	41 (59)	4.3 (2.3)

\* DMFT included dmft where primary teeth were present

Mean DMFT (±SD) for 52 (75%) children using a tooth cleaning pattern other than 'before breakfast + before bed' = 4.6 (±2.5)

‡ Rinses= mouthwash, water or salty water

## Discussion

Caries is a major dental health problem among rural Vietnamese schoolchildren. The study found a 96% caries prevalence amongst examined 12 yr-olds and a mean DMFT of 4.4 (±2.3) with only 4% subjects deemed caries-free. These figures exceed those reported by the WHO in 2004 for 12 yr-olds in other developing countries such as Thailand (prevalence: 57.3%; mean DMFT: 1.6), China (45.8%; 1.03) and Indonesia (76.9%; 2.2).<sup>5</sup> The mean DMFT for 12 yr-olds in the present study is more than twice a previous value of 1.8 for Vietnamese children in the years around 1990<sup>7</sup> and more than five times the DMFT score of 0.8 reported for Australian 12 yr-olds.<sup>5</sup> A high caries rate was also reported in a previous study of Vietnamese children aged 6-17 years, recording a mean DMFS score of 2.67 (± 4.27) for young permanent dentitions in the Ho Chi Minh City area.<sup>8</sup> A WHO study of 12 yr-old Mexican children reported in 2003 a DMF score index of 2.7 to 4.4 with 'Decayed' and 'Missing' as the prevailing components, highlighting inadequate access to dental care.<sup>9</sup> Similar caries experience and predominance of these two components were noted in the present study.

The present caries prevalence and mean DMFT scores of Vietnamese schoolchildren also exceed those reported recently for a 12 yr-old Australian aboriginal and Torres Strait Islander population (71.1%; 3.50).<sup>10</sup> A recent study reported a mean DMFT of 1.4 for a group of 12 yr-old aboriginal children in the Northern Territory of Australia, identifying indigenous status and social disadvantage as two factors contributing independently.<sup>11</sup> Rural Vietnamese children and Australian aboriginal children may be similar concerning major contributors to high caries experience. In a study of adults in rural and remote aboriginal communities in Australia, the most common reasons for presenting to the dental clinic were 'hole in tooth/ fillings required' (37.4%), followed by 'urgent/toothache' (24.8%), with 'check-up, no problems' comprising only 6.6% of responses.<sup>12</sup> An increased availability of refined sugars combined with a lack of oral health awareness has been linked to greater caries experience in developing communities 13-15 which may partly



explain the situation in rural Vietnam. The significantly higher caries experience of girls compared with boys in the present study was also observed in Australian aboriginal<sup>10</sup> and Vietnamese children<sup>8</sup> of a similar age group.

Increased frequency of sweet drink consumption was associated with a greater caries experience in the present study, but no relationship was seen between mean DMFT and the frequencies of consuming sweet foods or sweet drinks plus sweet foods. Data on the time of consumption of sweet foods/drinks (between meals or with meals) or form of sweet foods consumed (sticky, solid etc.) were not collected. Anecdotal reports suggest popular sweet foods such as sticky candies and sweet soups with added sugar are common between-meal snacks for these children. Adding sugar to foods is a common practice in Southern Vietnam and children living in more developed areas are likely to have a high exposure to sweet carbonated drinks and cariogenic foods, while the level of protection available from dental services is low.<sup>8</sup> Sweet carbonated drinks were observed by the present authors to be readily available in Ben Cau, appearing to be a major caries risk factor. While the relationship between sugar consumption and caries is no longer as strong as in the pre-fluoride era, restriction of sugar intake remains an important caries preventive measure in non-fluoridated areas and developing countries.<sup>14</sup>

All children who cleaned their teeth (99%) reported using a tooth brush and toothpaste. Only one subject flossed; 67% used toothpicks for inter-dental cleaning. Most subjects (77%) cleaned their teeth twice or more per day, greatly exceeding a previous report on a larger number of children drawn from all geographic areas of Vietnam which described only 52.6% of children cleaning their teeth twice or more per day.<sup>8</sup> The difference may reflect sample size and demographics, or respondent bias in order to please or give the anticipated correct answer. The most common time for tooth cleaning in the present study was before breakfast and before bed time (51%); only 4% cleaned their teeth after breakfast and 76% cleaned before bed time. Toothpicks and salty water (prepared locally by mixing a teaspoon of salt in a glass of tap water)

were considered by the authors to be 'traditional' tooth cleaning methods. Some children may have considered salty water to be 'mouthwash'. Such aids in addition to tooth brushing and toothpaste were associated (but not significantly) with lower caries experience. Although most children reported rinsing, it is unlikely the rinses were fluoridated since the availability of fluoride mouthwashes in rural areas is very low.

Subjects who reported cleaning teeth before breakfast and before bed tended to have a lower DMFT score than those using any other pattern of cleaning. Other cleaning times, such as after breakfast or in the afternoon, did not have a significant effect on mean DMFT score. A recent Australian study found *Mutans streptococci* infection in young children to be associated with high snacking frequency and inadequate tooth brushing.<sup>17</sup> The same study found that a single dental health education session and tooth-brushing instruction to mothers reduced *Mutans streptococci* infection in young children by approximately 25%.<sup>17</sup> Oral hygiene education for children and their parents, emphasizing cleaning teeth before bed and use of salty water rinsing, may be valuable in the rural community studied in Vietnam.

First permanent molars were the teeth most frequently affected by caries in the 12 yr-olds examined in the present study, typically showing advanced fissure caries and cavitation. A lack of professional care at appropriate stages including restoration of cavitated lesions was obvious with the 'Filled' component comprising only 1.9% of the DMFT score. Most caries was untreated, with DT representing 97% of the DMFT score. The high DT/DMFT ratio shows that dental treatment needs of this population are largely unmet. The authors noted a paucity of professional dental care in Ben Cau, in particular for preventive measures such as dietary advice, oral hygiene instruction, topical fluoride application and sealant placement. A previous study reported that approximately 50% of the DMFT score of 35-44 yr-olds in Vietnam comprised the 'Missing' component.<sup>7</sup> Treating caries by extracting rather than restoring teeth will not change without a vast increase in resources including well-trained dental personnel, restorative materials and

dental equipment. Such needs common to many parts of the developing world have been highlighted recently in a guided framework for volunteers working in disadvantaged communities,<sup>18</sup> and in an international collaboration among journals from developed and developing countries, attempting to raise public and professional awareness.<sup>19</sup>

The present study was limited by the small sample size, time constraints, resource availability, and assumption that questionnaire responses reflected actual behaviour of participants. No data were collected regarding periodontal disease, oral hygiene indices, timing and form of dietary sugar consumption, exposure to fluoride and access to professional dental care. Epidemiological research on these aspects is needed. The present findings show that the dental treatment needs of this community are largely unmet, providing a baseline for monitoring dental health of rural Vietnamese schoolchildren and highlighting the current urgency for professional dental care, preventive approaches and oral health education.

## Conclusion

Dental caries is highly prevalent in this small sample of rural Vietnamese schoolchildren, with a prevalence of 96% and mean DMFT of 4.4 (2.3) among 12 yr-olds. Frequent consumption of sweet drinks was associated significantly with caries experience. The dental treatment needs of this community are largely unmet. The present findings provide a baseline for monitoring dental health of rural Vietnamese schoolchildren and highlight the current urgency for professional dental care, preventive approaches and oral health education.

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For further information on the Rotary Australia Vietnam Dental Health Project, readers are encouraged to contact Dr James Robertson, at [robident1@bigpond.com](mailto:robident1@bigpond.com).

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## DENTAL CLINIC IN VIETNAM





# 9th Congress of the European Academy of Paediatric Dentistry

Dubrovnik, Croatia 29th May – 1st June 2008

Brief report from ANZSPD member Joe Verco

The following registrants attended from Australia:

Dr Eduardo Alcaïno	Dr Veronica Hall
Dr Laurence Bourke	Dr Sally Hibbert
Dr Suzanne Brent	Dr Michael Kenwood
Dr Angus Cameron	Dr Suzi Lighfoot Brown
Dr Mark Foster	Dr James Lucas
Dr Peter Gregory	Dr Louise B Messer
Dr Sumant Gue	Dr Nita Pai
Dr Hayfa Hadi	Dr Balya Sriram
Dr Roger Hall	Dr P.Joe.W.Verco

Australia was well presented in speakers and the following professionals presented:

Case Report: Traditional Calcium Hydroxide Pulpotomies For Complicated Crown Fractures of Permanent Incisors – Report of 10 Cases

P.J. Gregory\*

Audit of Facial Swelling In Patients Attending The Children's Hospital At Westmead (Chw), Sydney

B. Sriram\*, A.Cameron, R.Widmer, E. Alcaïno

Case Report: Prolonged Q-T Syndrome And Its Relevance In Paediatric Dentistry

P.J.Verco

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# ANNUAL STUDY DAY

TO BE HELD AT **Mac Bar and Brewery**

WHERE **Cnr of Taranaki and Cable Streets on the Waterfront, WELLINGTON**

WHEN **Saturday, 29th November, 2008**

TIME **9am to 4pm**

This is the 2nd Annual Study Day of ANZSPD – NZ branch. It is a day for sharing news and views on interesting topics and experiences. Lunch and “catch-up” opportunities with other members is a positive offshoot of the day.

Invitation to present is now open to all those who wish to review a topic of interest or who have an interesting case to share.

Slots of 15 minutes are allocated to speakers.

Please register “interest to present” with Erin at [erinkm@slingshot.co.nz](mailto:erinkm@slingshot.co.nz) by the end October.



# Colgate<sup>®</sup> Corner

by Dr Barbara Shearer  
Scientific Affairs Manager  
barbara\_shearer@colpal.com



## BrightSmiles

A community volunteer initiative supported by Colgate

Each year the challenge is to make Oral Health Month bigger and better than the year before. This year we hoped to have greater involvement with the dental profession and to try to really make a difference.

As members of ANZSPD are only too aware, in 2008 tooth decay is a disease of deprivation and a major health inequality. Working with social campaigner Jon Dee from Planet Ark, the Bright Smiles initiative was launched during Oral Health Month to help

children in need. The goal of the Bright Smiles campaign is to recruit hundreds of dentists to donate their time to treat disadvantaged children. Once a dentist volunteers for the program, the Bright Smiles team will liaise with a charity local to that practitioner, seeking their help to identify a child in need of treatment.

If you would like further information or to be a part of the Bright Smiles Initiative visit [www.brightsmiles.net.au](http://www.brightsmiles.net.au). Alternatively email [info@brightsmiles.net.au](mailto:info@brightsmiles.net.au) or call 02 9818 0915.



ASP Symposium in September

## Colgate Eminent Professor

### Professor Ray Williams

Professor Ray Williams visited Australia during September. Professor Williams is the Professor and Chair of the Department of Periodontology at the University of North Carolina, School of Dentistry at Chapel Hill. While in Australia Professor Williams was the Colgate Eminent Professor at the University of Adelaide. Professor Williams gave a symposium for practitioners and spent time with post graduate students.

On 19 September, the Australian Society of Periodontology (NSW Branch) hosted a symposium in Sydney. Professor Williams was joined by Professor Greg Seymour (Dean, Faculty of Dentistry, University of Otago) to lecture for the day. The morning sessions covered perio-systemic relationships while the afternoon sessions focused on risk factors and management of periodontal disease.



NZ Dental Association Conference

## NZDA Conference

The recent NZDA conference in Rotorua was a great success and Colgate was proud to be principal sponsor. There were several highlights including ANZSPD's own Dr Karen Mekertichian who gave two presentations: the first on treatment planning for compromised primary teeth and second reviewed the use of fluorides in clinical practice. In addition our BSBF Calendar winner for 2008 Halem Adams, a local school boy from Rotorua, received a framed copy of his artwork presented by NZDA president Dr Mark Goodhew. It was great to see the children participating in the oral health education sessions.

**Colgate Territory Managers are here to assist you with the products you need in your surgeries**

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# Coming events

10 October 2008  
Sedation in paediatric dentistry  
Crowne Plaza, Darling Harbour

29-31 October 2008  
Paediatric Society of New Zealand  
60th Annual Scientific Meeting  
Paihia, Bay of Islands

2-3 November 2008  
African regional Paediatric  
Congress  
Parktown, Johannesburg

21-23 November 2008  
Concept CPD  
Children's behaviour management/  
Central Otago Rail Trail experience  
Otarehua, New Zealand  
Contact Tony Dey for course brochure  
on 021 866 985  
or tony@lanzrecruitment.com

29 November 2008  
ANZSPD New Zealand Branch  
Annual Meeting  
Macs Brewery, Wellington

12-15 March 2009  
33rd Australian Dental Congress  
and Exhibition  
Perth, Australia

21-25 May 2009  
62nd AAPD Annual Session  
Honolulu, Hawaii

16-20 June 2009  
22nd IAPD International Congress  
International Congress Centre  
Munich, Germany

27-31 May 2010  
63rd AAPD Annual Session  
Chicago, Illinois

29-30 March 2010  
ANZSPD Biennial Meeting  
Queenstown, New Zealand

## Australia and New Zealand Society of Paediatric Dentistry www.anzspd.org.au

**Federal President** Dr Nina Vasan  
nvasan@xtra.co.nz

**Federal Secretary Manager** Dr Alistair Devlin  
devlins@iinet.net.au

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### Submissions

All text for inclusion in Synopses must be submitted to the editor on floppy disk, zip disk, CD or by email. Both PC and MAC formats are accepted. Media will not be returned. Address email to dorothy.boyd@phsouth.co.nz. Please enclose your contact details and email address with all submissions.

**Deadline next issue 15 January 2009**